EXHIBIT A

Clean copy of all pending claims (1-10 and 12-42)
U.S. Patent Application No. 09/701,831
Attorney Docket No. 2988-0661-999

1. (Presently amended) A process for preparing a composition of a vinylaromatic polymer matrix surrounding rubber nodules, comprising a step of polymerizing at least one vinylaromatic monomer in the presence of a rubber, a stable free radical which is not introduced into the polymerization mixture in a form linked to a rubber, and a polymerization initiator with a grafting character suitable for said composition wherein said polymerization involves at least one phase inversion,

wherein said composition is such that in a cross-section of the polymer matrix surrounded rubber nodules at least 90% of the total area occupied by the nodules corresponds to capsules having a diameter ranging from 0.1 to 1.0 μm, or else

wherein said composition is such that it comprises multi-occlusion nodules and is such that in one of its sections

20 to 60% of the total area occupied by the particles corresponds to particles having a diameter ranging from 0.1 to 1 μm,

5 to 20% of the total area occupied by the particles corresponds to particles having a diameter ranging from 1 to 1.6 μm, and

20 to 75% of the total area occupied by the particles corresponds to particles having a diameter of greater than 1.6 μm,

said step being such that:

-if (SFR) represents the number of moles of stable free radical in the polymerization mixture,

-if F_{SFR} represents the functionality of the stable free radical, i.e. the number of sites on the same molecule of stable free radical having the stable free radical state,

-if (INIT) represents the number of moles of polymerization initiator in the polymerization mixture before phase inversion, and

-if F_{INIT} represents the functionality of the initiator introduced before phase inversion, i.e. the number of sites having the free radical state that each molecule of initiator is capable of generating, then:

$$0.05 < \frac{F_{SFR} \text{ x } (SFR)}{F_{INIT} \text{ x } (INIT)} < 1.$$

2. (Previously Amended) Process according to claim 1, characterized in that

$$0.05 < \frac{F_{SFR} \text{ x } (SFR)}{F_{INIT} \text{ x } (INIT)} < 0.05$$

3. (Previously Amended) Process according to claim 1, characterized in that, if (RU) represents the number of moles of rubber,

$$0.1 < \frac{(SFR) \text{ x } F_{SFR}}{(RU)} < 10.$$

4. (Previously Amended) Process according to claim 1, characterized in that the ratio of (INIT) x F_{INIT} to the molar amount of vinylaromatic monomer ranges from 1 x 10^{-5} to 1 x 10^{-2}.

5. (Previously amended) Process according to claim 1, characterized in that the ratio of (INIT) x F_{INIT} to the molar amount of vinylaromatic monomer is greater than 2 x 10^{-4}.

6. (Previously Amended) Process according to claim 1, characterized in that the ratio of (INIT) x F_{INIT} to the molar amount of vinylaromatic monomer is greater than 4×10^{-4}.

7. (Previously Amended) Process according claim 1, characterized in that the ratio of (INIT) x F_{INIT} to the molar amount of vinylaromatic monomer is greater than 6×10^{-4}.

8. (Previously Amended) Process according to claim 1, characterized in that the polymerization mixture during the step of the process comprises, per 100 parts by weight of vinylaromatic monomer, 2 to 35 parts by weight of rubber and 0 to 5 parts by weight of solvent.

9. (Previously Amended) Process according to claim 1, characterized in that the rubber has a weight-average molecular mass ranging from 110,000 to 350,000 and a number-average molecular mass ranging from 50,000 to 250,000, and in that the matrix of vinylaromatic polymer has a weight-average molecular mass ranging from 90,000 to 250,000.

10. (Previously Amended) Process according to claim 1, characterized in that the rubber nodules have partially both a salami and/or labyrinth morphology and partially both an onion and/or capsule morphology.

11. (Previously Canceled)

12. (Previously Amended) Process according to claim 1, characterized in that:

-in the 0.1 to 1 μm size range, more than 95% of the particles have the salami or capsule morphology,

-in the 1 to 1.6 μm size range, more than 95% of the particles have the onion or salami morphology, and

-in the greater than 1.6 μm size range, more than 95% of the particles have the salami morphology.

13. (Previously Amended) Process according to claim 1, characterized in that:

-in the 0.1 to 1 μm size range, more than 95% of the particles have the capsule or onion or labyrinth morphology,

-in the 1 to 1.6 μm size range, more than 95% of the particles have the onion or labyrinth morphology, and

-in the greater than 1.6 μm size range, more than 95% of the particles have the labyrinth morphology.

14. (Previously Amended) Process according to claim 1, characterized in that the distribution of the diameters of nodules is bimodal.

15. (Previously Amended) Process according to claim 10, characterized in that the rubber has, as a 5% by weight solution in styrene, a viscosity at 25°C ranging from 60 to 300 mPa.s.

16. (Previously Amended) Process according to claim 10, characterized in that the rubber has a weight-average molecular mass ranging from 175,000 to 350,000 and a number-average molecular mass ranging from 70,000 to 250,000.

17. (Previously Amended) Process according to claim 16, characterized in that the rubber has a weight-average molecular mass ranging from 200,000 to 300,000 and a number-average molecular mass ranging from 90,000 to 200,000.

18. (Presently Amended) Process according to claim 1, characterized in that the composition is such that, in one of its cross-sections, at least 90% of the total area occupied by the particles corresponds to capsules having a diameter ranging from 0.1 to 1 μm.

19. (Previously Amended) Process according to claim 18, characterized in that the rubber has, as a 5% by weight solution in styrene, a viscosity at 25°C ranging from 15 to 60 mPa.s.

20. (Previously Amended) Process according to Claim 18 or 19, characterized in that the rubber has a weight-average molecular mass ranging from 110,000 to 200,000 and a number-average molecular mass ranging from 50,000 to 200,000.

21. (Previously Amended) Process according to claim 20, characterized in that the rubber has a weight-average molecular mass ranging from 150,000 to 200,000 and a number-average molecular mass ranging from 70,000 to 150,000.

22. (Previously Amended) Process according to claim 1, characterized in that the rubber is a homopolybutadiene.

23. (Previously Amended) Process according to claim 1, characterized in that the initiator is one of the following:

- isopropyl *tert*-butyl peroxycarbonate,

- 2-ethylhexyl *tert*-butyl peroxycarbonate,

- dicumyl peroxide

- di-*tert*-butyl peroxide,

- 1,1-bis(*tert*-butylperoxy)cyclohexane,

- 1,1-bis(*tert*-butylperoxy)-3,3,5- trimethylcyclohexane,

- *tert*-butyl peroxyacetate,

- cumyl *tert*-butyl peroxide,

- *tert*-butyl perbenzoate,

- *tert*-butyl per-2-ethylhexanoate,

- 2,2-bis(*tert*-butylperoxy)butane,

- butyl 4,4-bis(*tert*-butyl)valerate,

- ethyl 3,3-bis(*tert*-butyl)butyrate,

- 2,2-bis(4,4-di-*tert*-butylperoxycyclo-

hexyl)propane.

24. (Previously Amended) Process according to claim 1, characterized in that the initiator is chosen from diacyl peroxides, peroxy esters, dialkyl peroxides and peroxy acetals.

25. (Previously Amended) Process according to claim 24, characterized in that the initiator generates at least one *tert*-butyloxy radical.

26. (Previously Amended) Process according to claim 25, characterized in that the initiator is one of the following:

- isopropyl *tert*-butyl peroxycarbonate,

- 1,1-bis(*tert*-butylperoxy)cyclohexane,

- 1-1-bis(*tert*-butylperoxy)-3,3,5-trimethyl- cyclohexane.

27. (Previously Amended) Process according to claim 1, characterized in that the polymerization step is carried out at least partially at 80 to 140°C.

28. (Previously Amended) Process according to claim 1, characterized in that the polymerization step is carried out at least partially at 90 to 130°C.

29. (Previously Amended) Process according to claim 1, characterized in that the polymerization step is carried out at least partially, before phase inversion, at a temperature T such that T½ - 20°C < T < T½ + 20°C, in which T½ represents the temperature at which 50% of the initiator is decomposed in one hour.

30. (Previously Amended) Process according to claim 29, characterized in that the step is carried out at least partially at a temperature T such that T½ - 10°C < T < T½ + 10°C.

31. (Previously Amended) Process according to claim 1, characterized in that the polymerization initiator is added to the polymerization mixture after phase inversion.

32. (Previously Amended) Process according to claim 1, characterized in that the vinylaromatic monomer is styrene.

33. (Previously Amended) Process according to claim 1, characterized in that the polymerization is carried out continuously so that the phase inversion takes place in a plug-flow reactor.

34. (Previously Amended) A composition capable of being obtained by the process of one of claims 1-10 or 12-33.

35. (Previously Amended) Composition according to claim 34 comprising a stable free radical which is in a free form of in a form linked to a polymer chain by a covalent bond, comprising a matrix of vinylaromatic polymer surrounding rubber nodules, characterized in that the composition comprises multi-occlusion nodules and is such that, in one of its cross-sections,

-20 to 60% of the total area occupied by the particles corresponds to particles having a diameter ranging from 0.1 to 1 μm,

5 to 20% of the total area occupied by the particles corresponds to particles having a diameter ranging from 1 to 1.6 μm, and

20 to 75% of the total area occupied by the particles corresponds to particles having a diameter of greater than 1.6 μm.

36. (Previously Amended) Composition according to claim 35, characterized in that:

- in the 0.1 to 1 μm size range, more than 95% of the particles have the salami or capsule morphology,

- in the 1 to 1.6 μm size range, more than 95% of the particles have the salami morphology, and

- in the greater than 1.6 μm size range, more than 95% of the particles have the salami morphology.

37. (Previously Amended) Composition according to Claim 35, characterized in that

- in the 0.1 to 1 μm size range, more than 95% of the particles have the capsule or onion or labyrinth morphology,

- in the 1 to 1.6 μm size range, more than 95% of the particles have the onion or labyrinth morphology, and

- in the greater than 1.6 μm size range, more than 95% of the particles have the labyrinth morphology.

38. (Previously amended) Composition according to one of claims 34-37, characterized in that the distribution of the diameters of nodules is bimodal.

39. (Previously amended) Composition according to claim 34, characterized in that the melt index at 210°C with 5 kg is greater than 15 g/10 min (ISO 1133 H), the Vicat softening temperature (1 kg) is greater than 94°C (ISO 306 A50) and the notched Izod impact strength is greater than 8 kJ/m2 (ISO 180/1A).

40. (Previously amended) Composition according to claim 34, characterized in that the Vicat softening temperature (1 kg) is greater than 94.5°C and the notched Izod impact strength is greater than 9 kJ/m^2.

41. (Previously amended) Case for a television of a video recorder or a computer or a printer or a fax machine produced by injection molding a composition of claim 35.

42. (Previously Amended) Composition according to Claim 34, characterized in that the composition is such that, in one of its cross-sections, at least 90% of the total area occupied by the particles corresponds to capsules having a diameter ranging from 0.1 to 1 μm.